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October 4, 2011

The Blue Ribbon Commission on America's Nuclear Future  
U.S. Department of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585

Attention: Mr. John Kotek  
Executive Director

Dr. Thomas Cotton  
Senior Technical Advisor

Mr. Alex Thrower  
Counsel, Staff Director of the Transportation and Storage Subcommittee

Subject: Input on the BRC's Recommendation on Interim Storage

Dear Sirs:

We are pleased to provide Holtec International's input to the Blue Ribbon Commission's (BRC) draft report on America's Nuclear Future submitted to the Secretary of Energy on July 29, 2011 ("Report"). By way of introduction, we should inform you that Holtec International has carried out virtually all re-racking of fuel pools in the United States over the past 25 years and is the largest domestic supplier of dry storage systems in the country.

We are in full agreement with the central thrust of the Commission's recommendation to establish one or more Interim Storage Facilities for used nuclear fuel. At present, the vast majority of used fuel produced by U.S. reactors since the dawn of commercial nuclear energy five decades ago is presently stored in fuel pools. In the past 10 years, utilities have been moving used fuel to the so-called "dry storage" systems wherein the fuel is stored in a bone dry state surrounded by the (inert) helium gas to prevent degenerative oxidation. Dry storage of fuel in casks acquitted itself extremely well during the Fukushima Daiichi cataclysm when the double

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natural disasters of a Richter scale 9.0<sup>1</sup> earthquake followed by a 13.1+ meter (43+ foot) high<sup>2</sup> tsunami failed to cause a single cask at the site to leak. On the other hand, the fuel pools suffered loss of cooling and structural damage. The Fukushima experience has undoubtedly given solid credentials to dry storage as a reliably safe means to store used nuclear fuel. Even before Fukushima, the security concerns in the wake of 9/11 had given a strong impetus in the United States to reduce the quantity of fuel stored in the water filled pools by moving it into dry storage. As of this writing, over 1,400 canisters containing over 15,000 metric tons of used fuel are stored at 63 on-site commercial storage facilities in the United States. Over 200 canisters are being added to the dry storage stockpile in the United States each year. On-site storage is also gaining wider acceptance in Europe and Japan.

As the BRC Report notes, one arguably unsatisfactory aspect of dry storage as it is being practiced in the United States is the geographical dispersion of the storage sites. At present, virtually every nuclear plant site has its own on-site storage facility commonly referred to as the ISFSI (an acronym for Independent Spent Fuel Storage Installation). As visitors to nuclear plants know, an ISFSI loaded with only a few casks is an unmistakable presence in the plant's landscape that will raise "optical" problems of community acceptance after the plant's decommissioning, even though the dry storage casks are among the most terror-resistant structures at any industrial plant. The ruggedness of casks notwithstanding, the perceived risk of a 9/11 type assault on a plant site spawns a sense of unease on "Main Street" that has been scarcely ameliorated by a (not well publicized) scientific finding by the experts at a U.S. national laboratory which holds that the casks in use at the U.S. plants are capable of withstanding the impact from a crashing aircraft without allowing any radioactive matter to be released into the environment. The superb structural characteristics of the dry storage systems have likely played a role in the BRC draft Report that calls for Interim Storage of spent fuel in dry storage casks at a limited number of sites where the fuel can be safely stored with utmost security and safeguarding of public health and safety. We believe that a safe and secure Interim Storage Facility designed to be durable for, say a 300-year service life, which is readily achievable with modern materials and manufacturing methods, would avert the need for establishing a disposal site in the near future and preserve the prospect of future scientific developments to provide a productive use for the used fuel. To the believers in the inexorable forward march of technology, like this writer, a technical solution that renders used fuel into a valuable commodity, much like the morphing of

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<sup>1</sup> "The 2011 off the Pacific coast of Tohoku Pacific Earthquake and the seismic damage to the NPPs", report by NISA and JNES, April 4<sup>th</sup> 2011.

<sup>2</sup> "Report on investigation results regarding tsunami generated by the Tohoku – Taiheiyō – Oki – Earthquake in Fukushima Daiichi and Daini Nuclear Power Stations (vol. 2) -outline", Tokyo Electric Power Company, July 8<sup>th</sup>, 2011.

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oil crude from dirty sludge to liquid gold that occurred in the second half of the 19th century, is not farfetched. Who knows, used fuel may become a valuable material in the future. The challenge that the country faces at this time is to find an acceptable way to keep the fuel in an Interim Storage that wins the support of the American people. To make serious progress in this respect, it is necessary that the BRC Report speak directly to the concerns of the people.

We think that going beyond the call for an Interim Storage Facility(ies) and tackling the gist of the well-known public concerns will help surmount the political difficulties that bedeviled Yucca Mountain. Thus, in our view, the stature and standing of the Report would be further reinforced if it addressed the core issue of public health and safety in the context of Interim Storage in a more definitive manner. Towards this end, we ask that the BRC consider including the following broad criteria for the Interim Storage Facility (ISF): You will note that the criteria that we articulate below are entirely focused on maximizing public safety and security – both real and perceived.

### **Proposed Safety Criteria for Interim Storage**

#### **1. Utmost Safety**

The facility that houses the fuel must be exceedingly robust such that it can demonstrably shrug off the assault of the most unlikely threat regardless of its origin (natural or otherwise). Stated in tech-speak, the facility should withstand any credible Design Basis Threat without any risk of release of radioactivity. In this regard, it is reasonable to assume that the design-basis-threats that the society will call upon the nuclear industry to consider will only become more severe in this century which began 10 years ago with airplanes commandeered to crash into buildings.

#### **2. Negligible Impact on the Environment**

The radioactive particulate contamination of the environment must be zero (no emission, no release) and yearly ionizing radiation totals (dose to the public) must be minuscule, say, a fraction of what a person standing near the storage facility would receive from the sky overhead.



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### 3. Universal Storage Capability

Recognizing that the fuel is being housed in dry storage in a wide variety of canisters at the different nuclear plant sites, it is necessary that the Interim Storage Facility be designed to accept all types of canisters. A universal storage system that can interchangeably store any canister presently stored at any site in the U.S. would make it possible for a single ISF of standardized design serving all plants in its assigned region of the country. Further, it would be desirable for all Interim sites in the country to have the same standardized design such that inter-ISF transfer of used fuel canisters is possible.

### 4. Low Profile

The storage system should be as short in height as possible to minimize its physical profile and to make it more agreeable to the landscape.

### 5. Amenable to Incremental Expansion

The number of canisters will increase in the future as the quantity of used fuel increases from ongoing reactor operations. Accordingly, the facility should be expandable to meet future needs.

### 6. Convenient Retrievability

As its name suggests, the facility is intended for interim storage. It must therefore hold the canisters in a readily retrievable state.

### 7. Assurance of Zero Legacy Waste at the Site

It should be feasible to economically decommission the facility at the end of its operating life without any residual legacy contamination.

### 8. Able to Store High Level Waste (HLW) and Greater-Than-Class C Waste (GTCC Waste)

In addition to used fuel, there is a large quantity of the so-called HLW and GTCC Waste from military programs and civilian nuclear activities that needs to be dealt with. The ISF should be designed to integrate the storage of such hazardous materials, also dispersed at various locations in the country, in a universal storage system.



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In my view, setting down the above criteria that meet the perceived as well as the real safety needs of the public, would help make the Interim Storage Facility a palatable solution to the public and assuage the concerns of those who have long opposed nuclear energy on grounds of public health and safety.

Sincerely,

Kris Singh, Ph.D., PE  
President and CEO

cc: Ms. Stephanie Grant, Proposal Manager, Holtec  
HUG Membership  
Mr. Pierre Oneid, Senior VP and CNO, Holtec  
Mr. Charles Pardee, President, Exelon Generation and Chairman, Committee on  
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